

Notice of Allowability	Application No.	Applicant(s)	
	10/054,001	LIN ET AL.	
	Examiner	Art Unit	
	Alonzo Chambliss	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment B filed 6/6/03 and interview summary filed on 7/3/03.
2. ☒ The allowed claim(s) is/are 41-53, 57 and 58.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☒ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☒ including changes required by the proposed drawing correction filed 06 June 2003, which has been approved by the Examiner
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>10</u> . |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____. | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. Amendment A filed on 6/6/03 has been fully considered and made of record in Paper No. 9.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen B. Ackerman on July 3, 2003.

3. The application has been amended as follow:

IN CLAIMS:

Cancel claims 1-39 and 54-56.

In claim 42, line 9, delete " the planarized surface and;

In claim 42, line 10, after " semiconductor dies " insert -- and said polymer or epoxy to obtain a planarized surface --;

In claim 53, line 8, delete " to obtain a planarized surface ";

In claim 53, line 9, delete " the planarized surface and;

In claim 53, line 10, after " semiconductor dies " insert -- and said polymer or epoxy to obtain a planarized surface --.

Allowable Subject Matter

4. The following is a statement of reasons for the indication of allowance subject matter: the prior art of record does not teach or suggest the combination of a metal substrate with a glass layer with openings exposing the metal substrate, wherein a semiconductor die is attached to the exposed metal substrate. A dielectric layer is formed over the glass layer and the semiconductor die, wherein the glass layer has openings to the semiconductor die. A metal interconnect layer is applied overlying the dielectric layer and contacting the semiconductor die. A layer of solder is formed over and connected to the metal interconnect layer and reflowed to form solder bumps in claim 41.

Semiconductor dies mounted facing a first glass substrate. Filling polymer or epoxy between and over the backside of the semiconductor dies. Grinding the backside of the semiconductor dies and the polymer or epoxy to obtain a planarized surface. Mounting a second glass substrate on the backside of the semiconductor dies and grinding the first glass substrate. Etching holes in the first glass substrate to expose the semiconductor dies and sequentially forming polymer insulating layers and metal interconnect layers over the first glass substrate in claim 42.

Semiconductor dies mounted facing a first glass substrate. Filling polymer or epoxy between and over the backside of the semiconductor dies. Grinding the backside of the semiconductor dies and the polymer or epoxy to obtain a planarized surface. Mounting a second glass substrate on the backside of the semiconductor dies and grinding the first glass substrate. Removing the first glass substrate and sequentially

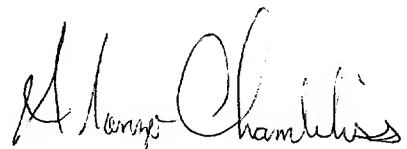
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forming polymer insulating layers and metal interconnect layers over the semiconductor dies in claim 53.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for the Group is (703) 308-772 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-7956.

AC/July 3, 2003

A handwritten signature in black ink, appearing to read 'Alonzo Chambliss', is positioned above the printed name.

Alonzo Chambliss
Patent Examiner
Art Unit 2827